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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/853,234	05/11/2001	Geoffrey S. Strongin	2000.080000/TT4828	5962

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WILLIAMS, MORGAN & AMERSON, P.C.  
10333 RICHMOND, SUITE 1100  
HOUSTON, TX 77042

EXAMINER
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COURTENAY III, ST JOHN

ART UNIT	PAPER NUMBER
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2126

DATE MAILED: 04/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/853,234

Applicant(s)

STRONGIN ET AL.

Examiner

St. John Courtenay III

Art Unit

2126

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

  
ST. JOHN COURTENAY III  
PRIMARY EXAMINER

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### Detailed Action

New grounds of rejection are set forth below responsive to Applicant's amendments and arguments.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 – 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Angelo et al.** (U.S. Patent 5,850,559) in view of **Klein** (U.S. Patent 6,532,510).

#### **As per independent claim 1:**

**Angelo** discloses the invention substantially as claimed:

**Angelo** teaches a programming code for execution while a computer system is in system management mode (SMM), the code comprising:

- one or more instructions executable while the computer system is in SMM [e.g., see "*SMI places the computer in system management mode, causing an SMI handler to routing to be executed. In turn, the SMI handler responds by executing all applications registered with the application registrar. Importantly, the registered applications are verified and executed in a secure manner*" and associated discussion col. 3, lines 61-67; see col. 13, lines 5-14];

- an entry or exit location [e.g., entry and exit locations are inherent for any executable code or application, as disclosed above – see “registered applications”]; and

However, **Angelo** does not *explicitly* teach the following additional limitations:

**Klein** teaches the use of *at least one of* an entry location for re-entering SMM substantially after the one or more instructions and an exit location for interrupting SMM substantially after the one or more instructions, as claimed, *i.e.*, Klein teaches a system for processing different priority (*i.e.*, nested) SMI interrupt requests, substantially as claimed [e.g., see “first, second, and third SMI handler routines” and associated discussion beginning, col. 4, line 11; also see col. 4, SMI interrupt priority discussion beginning line 29; see also fetching instructions for 2<sup>nd</sup> & 3<sup>rd</sup> SMI handler routines, col. 6, line 41-67].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to improve upon the system taught by **Angelo** by implementing the improvements detailed above because it would provide **Angelo's** system with the enhanced capability of “implementing time-sensitive applications using system management mode” [e.g., see **Klein**, col. 2, lines 10-11].

**As per dependent claim 2:**

**Angelo**, as modified by **Klein**, teaches:

- another entry or exit location placed after the one or more additional instructions executable while the computer system is in SMM [col. 8, lines 11-29 – see discussion of loading a new address into the microprocessor’s SMI starting address register; see also **Klein** – e.g., fetching instructions for 2<sup>nd</sup> & 3<sup>rd</sup> SMI handler routines, col. 6, line 41-67]; and

- one or more further instructions executable while the computer system is in SMM [Angelo discloses a plurality of registered applications that are securely executed in SMM, e.g., see discussion col. 3, lines 61-67; it is inherent that any executable application is comprised of "one or more executable instructions," as claimed; see also col. 13, lines 5-14; see **Klein** - see fetching instructions for 2<sup>nd</sup> & 3<sup>rd</sup> SMI handler routines, col. 6, line 41-67].

**As per dependent claim 3:**

**Angelo**, as modified by **Klein**, teaches:

- the entry or exit location includes both an entry location and an exit location [e.g., see discussion of SMI starting address register, col. 8, lines 14-17]; and
- the another entry or exit location includes both another entry location and another exit location [see col. 8, lines 11-29 - see discussion of loading a new address into the microprocessor's SMI starting address register; see also **Klein** - e.g., fetching instructions for 2<sup>nd</sup> & 3<sup>rd</sup> SMI handler routines, col. 6, line 41-67].

**As per dependent claim 4:**

**Angelo**, as modified by **Klein**, teaches the entry or exit location includes both an entry location and an exit location [inherently part of an SMI handler; also every executable program inherently has an entry location and an exit location; see Klein prioritized SMI discussion col. 6].

**As per dependent claim 5:**

**Angelo** teaches the programming code is stored in a memory [col. 8, lines 11-15].

**As per dependent claim 6:**

**Angelo** teaches the memory is a BIOS ROM [col. 6, lines 58-60].

**As per dependent claim 7:**

**Angelo** teaches the programming code is stored in SMM space [col. 8, lines 1-29].

**As per independent claim 8:**

This claim is rejected for the same reasons detailed above in the rejection of independent claim 1, and also for the following additional reasons:

**Angelo**, as modified by **Klein**, teaches a method of operating a personal computer system while in SMM, the method comprising:

- executing one or more instructions of SMM code routine while the personal computer system is in SMM [e.g., see **Angelo**: *"SMI places the computer in system management mode, causing an SMI handler to routing to be executed. In turn, the SMI handler responds by executing all applications registered with the application registrar. Importantly, the registered applications are verified and executed in a secure manner"* and associated discussion col. 3, lines 61-67; it is inherent that any executable application is comprised of "one or more executable instructions" – see also col. 13, lines 5-14; **Klein** teaches executing one or more instructions of SMM code routine while the personal computer system is in SMM – see discussion col. 6];
- exiting the SMM code at an exit location not at the end of the SMM code routine [see **Klein** where the computer is already in the SMM state when it is interrupted by a second SMI interrupt and associated discussion col. 6, lines 34-47].

**As per dependent claim 9:**

**Klein** teaches:

- re-entering the SMM code routine at the exit location [see **Klein** col. 6, lines 34-68, re: 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> level SMI interrupt servicing and return] ; and
- continuing executing instructions of the SMM code routine while the personal computer system is in SMM [Klein col. 6, lines 48-68 discussion].

**As per dependent claim 10:**

**Klein** teaches, upon entering SMM, beginning executing instructions of the SMM code routine for a first time at a location other than a start of the SMM code routine [see **Klein** col. 6, lines 34-68, re: 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> level SMI interrupt servicing and return].

**As per dependent claim 11:**

**Klein** teaches entering the SMM code routine at an entry location other than a start of the SMM code routine [see **Klein** col. 6, lines 34-68, re: 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> level SMI interrupt servicing and return].

**As per dependent claim 12:**

**Klein** teaches saving a state of the SMM code routine before exiting SMM [e.g., see col. 6, lines 35-40, re: saving context from SMI interrupt].

**As per independent claim 13:**

This claim is rejected for the same reasons detailed above in the rejection of the preceding independent claims, and also for the following additional reasons:

**Angelo**, as modified by **Klein**, teaches a computer readable program storage device encoded with instructions that, when executed by a personal computer system, performs a method operating the personal computer system while in SMM, the method comprising:

- executing one or more instructions of SMM code routine while the personal computer system is in SMM [see **Angelo** SMI handler and associated discussion col. 13, line 2; see discussion of secure execution of registered applications in system management mode, col. 32, lines 60-67; also col. 13, lines 6-8; see Klein col. 6 SMM and SMI discussion];
- exiting the SMM code at an exit location not at the end of the SMM code routine [e.g. see **Klein** where the computer is already in the SMM state when it is interrupted by a second SMI interrupt and associated discussion col. 6, lines 34-47].

**As per dependent claim 14:**

**Angelo**, as modified by **Klein**, teaches the method further comprising:

- re-entering the SMM code routine at the exit location [see **Klein** where the computer is already in the SMM state when it is interrupted by a second SMI interrupt and associated discussion col. 6, lines 34-47]; and
- continuing executing instructions of the SMM code routine while the personal computer system is in SMM [see **Klein** col. 6, lines 34-68, re: 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> level SMI interrupt servicing and return].

**As per dependent claim 15:**



**Angelo**, as modified by **Klein**, teaches the step of, upon entering SMM, beginning executing instructions of the SMM code routine for a first time at a location other than a start of the SMM code routine [ see **Klein** where the computer is already in the SMM state when it is interrupted by a second SMI interrupt and associated discussion col. 6, lines 34-47].

**As per dependent claim 16:**

**Klein** teaches entering the SMM code routine at an entry location other than a start of the SMM code routine [see **Klein** col. 6, lines 34-68, re: 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> level SMI interrupt servicing and return].

**As per dependent claim 17:**

See the rejection of claim 12 above.

**As per independent claim 18:**

This claim is rejected for the same reasons detailed above in the rejection of the preceding independent claims, and also for the following additional reasons:

**Angelo**, as modified by **Klein**, teaches a method of operating a personal computer system while in SMM, the method comprising:

- entering SMM [Angelo, col. 3, line 62; see Klein col. 6 discussion];
- loading an SMM code routine at an entry location other than a start of the SMM code routine [see **Klein** col. 6, lines 34-68, re: 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> level SMI interrupt servicing and return]; and,
- executing one or more instructions of the SMM code routine while the personal computer system is in SMM, beginning at the entry location other than the start of the SMM code routine [see **Klein** col. 6, lines 37-40].

**As per dependent claim 19:**

**Angelo** teaches exiting the SMM code routine at an end of the SMM code routine [see SMI shutdown handler, col. 4, lines 46-52; see Klein col. 6, line 19].

**As per dependent claims 20, 22:**

See the rejection of claim 12 above.

**As per dependent claim 21:**

**Klein** teaches exiting the SMM code routine at an exit location other than an end of the SMM code routine [e.g. see **Klein** where the computer is already in the SMM state when it is interrupted by a second SMI interrupt and associated discussion col. 6, lines 34-47].

**As per dependent claim 23:**

**Klein** teaches reloading a saved SMM state upon entering SMM [e.g., see col. 6, context restoring discussion, beginning, line 34].

**As per dependent claim 24:**

**Klein** teaches reloading the saved SMM state upon entering SMM comprises reading an entry of a storage location that provides an address to a location of the saved SMM state [e.g., e.g. see **Klein** where the computer is already in the SMM state when it is interrupted by a second SMI interrupt and associated discussion col. 6, lines 34-47].

**As per independent claim 25:**

This claim is rejected for the same reasons detailed above in the rejection of the preceding independent claims, and also for the following additional reasons:

**Angelo**, as modified by **Klein**, teaches a computer readable program storage device encoded with instructions that, when executed by a personal computer system, performs a method operating the personal computer system while in SMM, the method comprising:

- entering SMM [**Angelo** col. 3, line 62];
- loading an SMM code routine at an entry location other than a start of the SMM code routine [**Angelo** see discussion of secure execution of registered applications, col. 32, lines 60-67; **Klein** - see fetching instructions for 2<sup>nd</sup> & 3<sup>rd</sup> SMI handler routines, col. 6, line 41-67]; and
- executing one or more instructions of the SMM code routine while the personal computer system is in SMM, beginning at the entry location other than the start of the SMM code routine [see discussion of secure execution of a plurality of registered applications, col. 32, lines 60-67; **Klein** - see fetching instructions for 2<sup>nd</sup> & 3<sup>rd</sup> SMI handler routines, col. 6, line 41-67].

**As per dependent claim 26:**

See the rejection of claim 19 above.

**As per dependent claims 27 & 29:**

See the rejection of claim 12 above.

**As per dependent claim 28:**

See the rejection of claim 21 above.

**As per dependent claim 30:**

**Klein** teaches reloading a saved SMM state upon entering SMM [e.g., see reloading the hash table used to verify application integrity and associated discussion col. 4, lines 12-14; **Klein** teaches fetching instructions for 2<sup>nd</sup> & 3<sup>rd</sup> SMI handler routines, col. 6, line 41-67; e.g. see **Klein** context saving (and restoring upon return from SMI) where the computer is already in the SMM state when it is interrupted by a second SMI interrupt and associated discussion col. 6, lines 34-47].

**As per dependent claim 31:**

**Angelo** inherently teaches that the reloading of the saved SMM state upon entering SMM comprises reading an entry of a storage location that provides an address to a location of the saved SMM state [e.g., see reloading the hash table used to verify application integrity and associated discussion col. 4, lines 12-14; **Klein** teaches fetching instructions for 2<sup>nd</sup> & 3<sup>rd</sup> SMI handler routines, col. 6, line 41-67].

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**Prior Art not relied upon:**

Please refer to the references listed on the attached PTO-892  
which are not relied upon in the claim rejections detailed above.

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**How to Contact the Examiner:**

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to **St. John Courtenay III** whose voice telephone number is **(703) 308-5217**. A voice mail service is also available at this number. Normal Flex work schedule: M – F 7:30 AM - 4:00 PM

- **All responses sent by U.S. Mail should be mailed to:**

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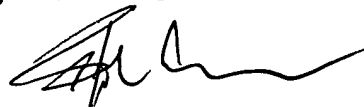
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- Any inquiry of a general nature or relating to the status of this application should be directed to the **TC 2100 Group receptionist: (703) 305-3900**.

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**ST. JOHN COURTENAY III  
PRIMARY EXAMINER**